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☞See advertisement on last page.

Poetry.

THE LIGHT IN THE WINDOW.

BY CHARLES MACKAY, LL.D.

Late or early home returning,
In the starlight or the rain,
I beheld that lonely candle
Shining from his window-pane,
Ever o'er his tattered curtain
Nightly looked, I could scan,
Aye inditing,
Writing—writing,
The pale figure of a man ;
Still discern behind him fall
The same shadow on the wall.

Far beyond the murky midnight,
By dim burning of his oil,
Filing aye his rapid leaflets,
I have watched him at his toil ;
Watched his broad and sunny forehead,
Watched his white industrious hand,
Ever passing
And repassing
Watched, and strove to understand
What impelled it—gold or fame—
Bread, or bubble of a name.

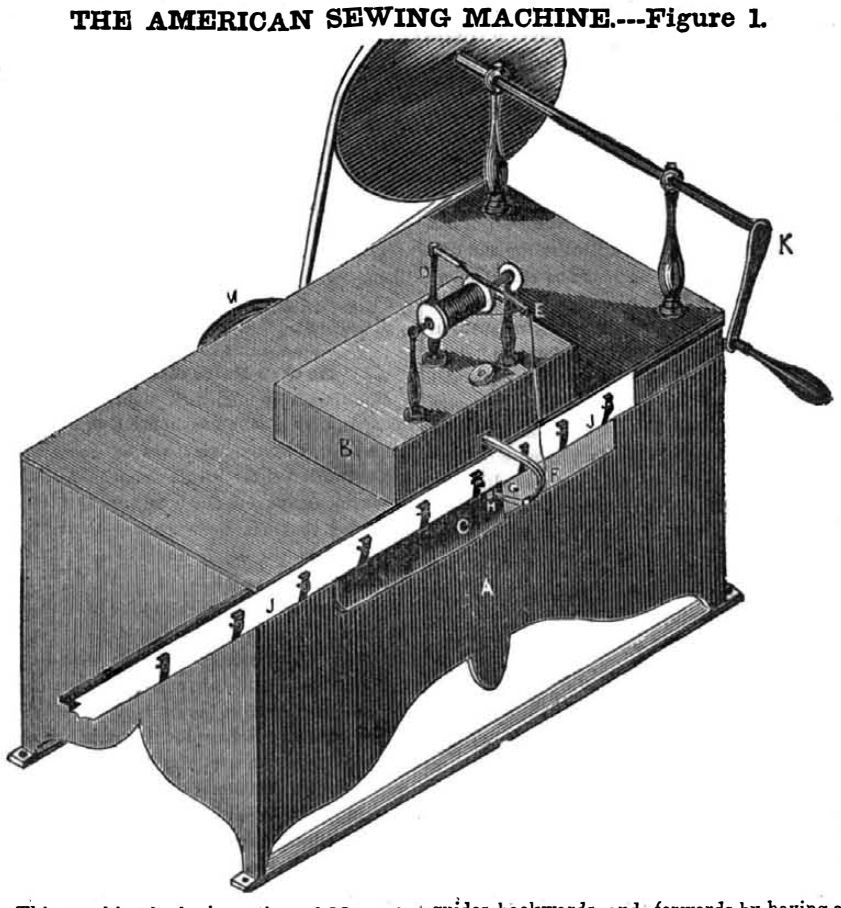
No one sought him, no one knew him,
Undistinguished was his name ;
Never had his praise been uttered
By the oracles of fame.
Scanty fare and decent raiment
Humble lodging, and a fire—
These he sought for,
These he wrought for,
And he gained his meek desire ;
Teaching men by written word—
Clinging to a hope deferred.

So he lived. At last I missed him ;
Still might evening twilight fall,
But no taper lit his lattice—
Lay no shadow on his wall.
In the winter of his seasons,
In the midnight of his day,
Mid his writing,
And inditing,
Death had beckoned him away—
Ere the sentence he had planned
Found completion at his hand.

But this man so old and nameless,
Left behind him projects large
Schemes of progress undeveloped,
Worthy of a nation's charge
Noble fancies uncompleted,
Germs of beauty immatured,
Only needing
Kindly feeding
To have flourished and endured
Meet reward in golden store ;
To have lived for evermore.

Who shall tell what schemes majestic
Perish in the active brain ?
What humanity is robbed of,
Ne'er to be restored again ?
What we lose, because we honor
Overmuch the mighty dead.
And Dispirit
Living merit,
Heaping scorn upon his head !
Or perchance when kinder grown
Leaving it to die alone ?

THE AMERICAN SEWING MACHINE.---Figure 1.



This machine is the invention of Morey & Johnson, of Mass. The agent is Mr. John A. Lerow, New England Hotel, this city, to whom communications should be addressed.

Fig. 1, is a perspective view, fig. 2 an end section, and fig. 3 a front section. The sections are reduced in scale from fig. 1. The same letters refer to like parts. The appearance of the machine is like a little box. The cloth is carried along by a bar and the needle has a reciprocating motion—passing through the cloth with a thread into the inside of the box and where the thread is caught by a hook and drawn back—then the next stitch of the needle passes between the double thread and is caught by the hook inside which parts with the former loop—alternately drawing the loop from the middle over the former loop, working a chain stitch. A, is the box, and B is the spool stand, from which the thread passes from the spool S, through the eye of a small spring arm E, then through a small ring on the outer end of the reciprocating or stitching rod F, then through the eye of the needle G, near the middle. J J, is the bar in which the cloth is fastened. It has a rack on the inside at the top which moves the cloth along in line regularly by a ratchet inside and the needle passes through the cloth out and in, to the box inside through a small hole H, being moved thus by the reciprocatinfi rod F.

FIG. 2

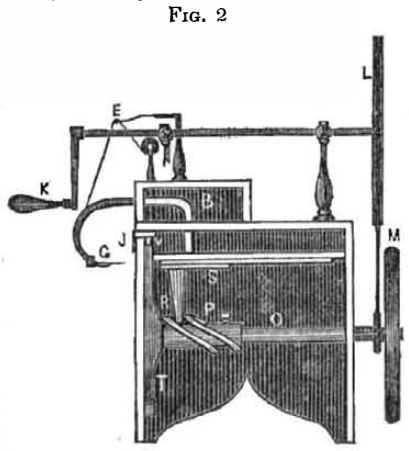


Fig. 2, the end section, shows how the crooked reciprocating rod is worked. It is attached to a brass plate Z, which is moved in guides backwards and forwards by having a projecting pin R, which is secured into it, set in between the threads of the worm P. When O, the shaft, is revolved, the pin R, will be carried in the channel P, driving the slide S, and the reciprocating rod with the needle out and in, backwards and forwards. A small cord from the pulley L, passing over a small pulley on the shaft of the fly wheel M, drives O, by working the handle K. By driving this handle the needle is moved out and in, the hook inside forming the loop at the same time, and thus it is a self feeding machine.

FIG. 3.

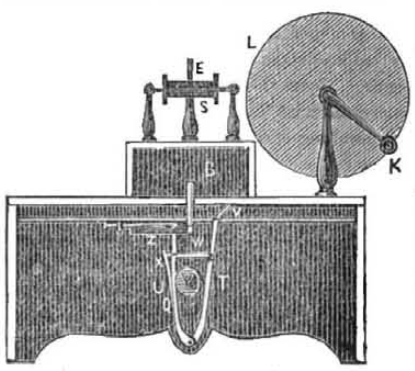


Fig. 3, shows how the catch hook operates. If the needle is moved out and in through the cloth, it is evident that the hook must have reciprocating motion likewise, but traverse to the other so as to catch the thread on the needle and draw it off, catching around the other loop. This is done as follows: T U, is a clasp which surrounds a cam Y, on the end of the axle. This clasp is held firmly to the cam by a band W, and there is a small spring X, to give it elasticity. The top of the clasp on the left hand is inserted into a hole in the slide Z, which moves the hook above, the crook of which will be noticed, therefore when the axle is revolving, the cam Y makes the spring clasp to drive the hook backwards and forwards slipping off the one loop and catching the other thread doubling it over, making a chain loop. There is a small dent on the needle for the hook to catch the thread easily. These machines are very accurately adjusted in all their parts to work in harmony, without this they would be of no use. But they are now used in most of the Print Works and Bleach Works in New England, and especially by the East Boston Flour Company! It sews about one yard per minute, and we consider it superior to the London Sewing Machine—the specification of which is in our possession. It is more simple—and this is a great deal. It will not be easy for any one to comprehend its operation—it is difficult to explain to others—although clear to us who have seen it operate. The loop formed is exactly the same as that of the knitting hook kind, only driven through the cloth C, and retained behind. The rack bar that holds the cloth is moved by the pall V, which catches, moves and frees the rack every stitch by the cam Y operating the clasp T Q. For Upholsterers and bag makers it is a valuable machine. The price of a machine and right to use $135.

RAILROAD NEWS.

Opening of the Sullivan Railroad.

The Sullivan Railroad, from Bellows Falls, Vt., to Charlestown, N. H., was opened for travel on Thursday, the 4th inst. The occasion was celebrated in a proper style, by a large number of the stockholders and friends of the Road. A train left the Fitchburg depot in Boston at 20 minutes past seven, and arrived at Charlestown at a quarter past two—the distance travelled being about 122 miles. On the arrival of the train, the bells of the meeting-houses rung a merry peal.

The Great Russian Railroad.

Major Whistler the superintendent of the Great Railroad between St. Petersburg and Moscow, has been twice attacked by the cholera, but by late accounts was getting better. All the workmen lately under his charge had been drafted into the army and the work suspended. The emperor is on the look out for a brush.

Plank Road from Utica to Syracuse.

The people of Utica are talking of connecting a plank road from that city with the one which runs along the Oneida Lake route so as to connect Utica with Syracuse. This is no doubt the best route.

Noble Conduct of an Engine Driver.

In consequence of the breaking of part of the machinery, an engine and tender were precipitated down a high embankment on the Yorkshire (England, Railway. There were three men on the engine at the time ; two were fearfully crushed one of whom subsequently died. Callaghan the engine driver, after assisting his fellow sufferers amid the awful circumstances by which he was surrounded had the presence of mind to recollect that the mail train from Leeds to Manchester was just due. Callaghan managed though severely hurt, to scramble on to the line, and found that the rails had been sprung and two of the chairs broken. He started off towards Normantown to stop the train, and after falling several times from weakness and the darkness of the night, the poor fellow reached the signal light. When he got to this point he was so exhausted that he could not tell the signal man what he wanted, but made him understand by motions that the approaching train was to be stopped. The signal was turned on just in time to stop the mail train! Callaghan is to be rewarded by the company for his deserving conduct which probably saved hundreds of lives.

It has become high fashion in London among the nobility, to employ their leisure time in the arts of design. The Queen and Prince Albert have set the mode, and of course all follow suit. The old story of "the Babes in the Wood," has recently been published in London, with ten illustrations, described as exquisite, by the young Marchioness of Waterford.

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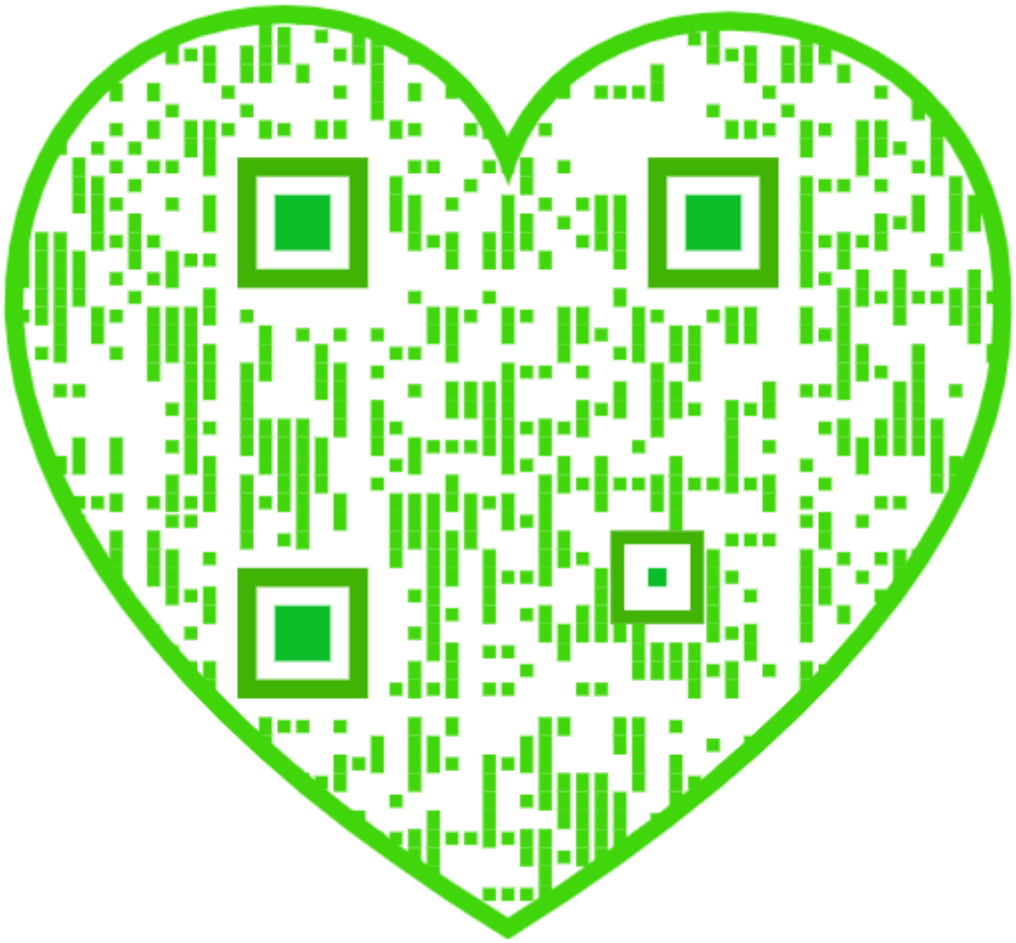

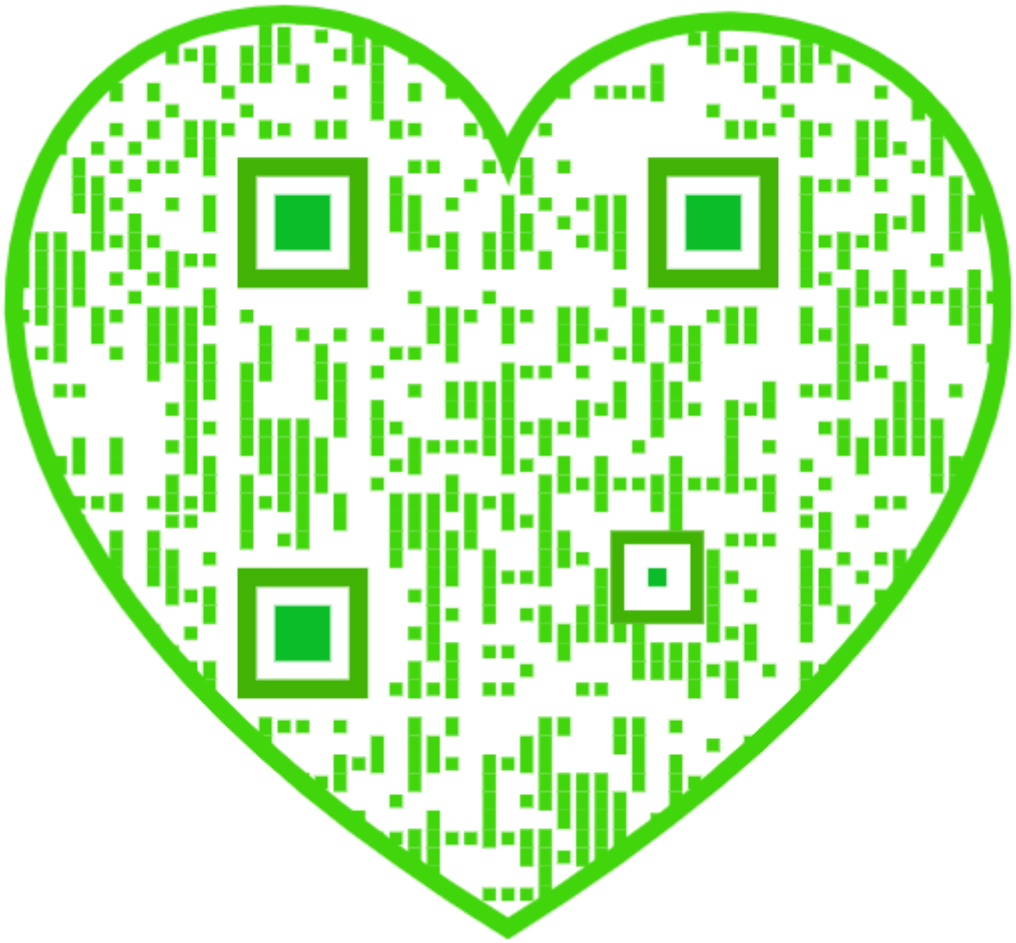

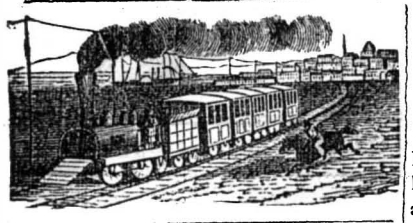

Patent Cases.—Extension of a Patent by Act of Congress.

A bill has been introduced into the U. S. Senate for the extension of a patent (in fact it may be called a real grant) to a Mr. Green for improvements in the sheet iron manufacture.

On the 16th inst. the case of Parker vs. Perkins (noticed in our last) before Judge Kane, at Philadelphia, for infringement of a patent, wherein the patentee suffered a nonsuit, was again added to the list.

The Gold Region.

The latest accounts from the gold regions, jingle more of the Golden Rocks than all others which have preceded them. Commodore Jones has written a long despatch to Washington, stating that rocks of Pure Gold weighing 4, 5 and 16 pounds, are frequently picked up by the gold washers on the Sacramento. It really appears, as if away down below the California mountains there had been a bed of gold, something like a Pennsylvania Coal bed, and which had been heaved up by some internal convulsion.

Neither soldiers nor sailors can be held by miltary rule. All run away to the placers.

Tax on Foreigners.

The Supreme Court of the United States, has declared, the Law of this State unconstitutional in taxing emigrant passengers. This will prove disastrous to our benevolent organizations for the protection of passengers. Something must be done to support our Hospitals and carry out the schemes for which the taxes were levied. Let all our citizens like one man petition Congress for yearly grant of about the sum required. This cannot be refused if we persist in the demand. It is said that the State will have to refund two hundred thousand dollars of passenger money to the merchants. Will the merchants be made to disgorge to the passengers who paid them the tax? We trow not.

Impeachment of a Judge.

The impeachment of Judge Munroe, of the U. S. District Court of Kentucky, for his late decision in the Telegraph suit between Morse and O'Reilly, is suggested in a memorial which Mr. O'Reilly has presented to Congress.

We are doubtful of the above. We do not think that any of our Judges can be impeached. They are men of character, although sometimes we believe, they make wrong decisions by mistake.

Pianos and Factory Girls.

The Lowell agent of the most celebrated Piano Forte manufacturers in Boston, states that he had sold no less than eight pianoes during the last six months to girls now actually employed in the factories in that city. The prices ranged from $250 to $350 each.

Well, have the factory girls not as good a right to pianos as lawyers or merchants daughters? The luxuries and comforts of life are not incompatible in their enjoyment with physical toil. This truth we think is not appreciated by the community.

Fish Frozen to Death.

We learn that during the recent cold weather immense quantities of fish have been frozen and floated on shore at various parts along the coast of New England. Accouuts of large quanties of bass thrown out have been published and we learn that smaller fish and eels by the barrel full have been thus affected by the ocean at Stonington and other places. The "anchor frost," as it is technically termed, is of rare occurrence—so rare, as to lead persons residing away from the sea to doubt the truth of the stories told of it. But this is by no means the strangest fish story, of which the truth can readily be proved.

Franconia in N. H. is undoubtedly the coldest quarter in the United States. On the 11th inst., the mercury was down to 30 degrees below zero.

LITERARY NOTICES.

Ladies National Magazine.

The February No. of this popular monthly has been sent us by the publishers. We always extend to it a hearty welcome. The illustrations are "Our Alice," and the Clondalkin round tower situated 4 miles from Dublin accompanied by a tale by P. H. Shelton. But the most interesting feature in this No. is the Palaces and Prisons, or story of the Fruit Girl, dedicated to Mrs. Zadoc Pratt by Ann S. Stephens the author. There is always something original and peculiarly attractive in this magazine and and we cheerfully recommend to the attention of our readers. Terms $2. Published by C. J. Peterson Philadelphia.

Godey's Lady,s Book.

The February number of this beautiful and able Magazine is rich in illustration and displays a great amount of good matter. It is one of our popular light literary works, some of which are not our favorites by any means, but Godey sparkles with wit, wisdom and good breeding. It is like a clear full streamlet sometimes seen meandering among the wild woods—and sometimes dancing and laughing between green grassy banks fringed with water lilies and bright blue sedges, and although the able T. S. Arthur gives a Merry Sleigh Ride, yet it has spring in its eye and summer in its bosom.

The Cholera, its Causes, Prevention and Cure.

This is a work just published by these enterprising gentlemen, Messrs. Fowler & Wells, Clinton Hall, this city. The author of it is Dr. Joel Shew, who in this work shows the superiority of the Water Cure in the treatment of disease—and the prevention too—over all other modes of treatment. This is a capital little volume, both on account of the manner and matter. Its moral tone is very elevated.

Coast Survey.

We are much obliged to J. M. Wampler, Esq. of the U. S. C. Survey, for a copy of the Coast Survey, by Lieut. C. H. Davies, U. S. N. We shall revert to this pamphlet again, and the principles upon which the Scientific gentlemen of the U. S. N. conduct their operations.

Camera Lucida.

The demand for these beautiful instruments has been so great for a few weeks back that we have been unable in some instances to supply orders. But we have now received a large and *superior* lot which we can sell at the remarkable low price of $6 (our former price for inferior ones) we have also made extensive arrangements for their manufacture in future so that no delays in supplying them will again occur. Some that have purchased them are so pleased with their operation that $50 would not purchase one if another of our kind could not be procured. Every person engaged in sketching or painting should have one of these instruments and by placing one in the possession of a child it will foster a taste for drawing which seems to be natural to all, but which is too often neglected. Every person should be able to sketch and certainly there is no better assistant to an acquirement of the art than being in possession of a Camera Lucida. Address Munn & Co.

Our Prize Essay.

The New York Path Finder, a keen, clever and able paper, in reference to the prize offered for the Essay on the Patent Laws, says "there are few men comparatively in our country able to furnish an Essay of any worth on the above subject. Writing essays on the Patent Laws of this country, is something like writing specifications descriptive of complicated machinery,—a work we suggest that not one lawyer out of every twenty five in our country, is competent to perform."

This a touch to the Boston Times, which thought that no person but "a lawyer in good practice" could write such a work. When lawyers make out any document, they always put in too, many *I declares* and *says*.

Mr. Isaac M. Singer, of this city, has invented a new Gold Washer, which for cheapness, simplicity and utility far surpasses any yet in the market. A full description will be given in a week or two with an engraving.

Seed Grain steeped in Arsenic.

A late number of the London Lancet mentions a practice which is common among the English farmers, of steeping their wheat in a solution of arsenic before sowing it, with a view of preventing the ravages of the worm on the seed, and of birds on the plant when grown. The plan is stated to have proved eminently successful, and of course exerts no deleterious effects on the plant. In Hampshire, Linconshire, and many other districts where the practice prevails, numbers of partridges, and pheasants have been found dead in the wheat fields, poisoned by eating the seed, which they had abstracted from the earth. So thorough were the effects of the poison, that some of the flesh of these birds administered to a cat, caused her to vomit, and to exhibit the usual symptoms attendant on poison.

This is certainly a practice to be condemned. We hope that none of our farmers will try the same trick. We can afford to feed both men and birds.

How to Raise Good Beets.

Manure pretty well with stable dung and the scrapings of the hen-house floor early in the winter with enough ashes to ensure the decomposition of the stable dung. This is as powerful and as effectual as any system of manuring that has been ever yet invented. In May sow the seeds in drills, 18 inches apart. As soon as the beets make their appearance pour on them from time to time all the soap-suds raised in the laundry. This is also an excellent practice; and in our opinion every good gardener will save every drop of soap-suds raised in his establishment. The proper time for their application is in the evening after the sun goes down; if they are applied while the sun is shining hot they are very apt to kill the plants. Of course they should not be applied while the ground is wet from fresh rain—for the ground will thereby be reduced to a mortar by too great a supply of moisture. One beet only should be left to every eight inches. By these means Mr. Wright has been able to bring the common red table beet to perfection.

Railroad Speed and Safety.

When the celebrated engineer Brunel, who accomplished the desperate experiment of tunnelling the Thames river, was brought before a committee of the British Parliament, he was asked if a speed of eighty miles per hour on a certain railroad would be much more dangerous to the traveller upon it than a speed of forty.

"It would be just the same," said he

"And a speed of ninety?"

"Just the same."

"And a speed of one hundred?"

"Just the same! For," said he, "if the cars should run off the track at the rate of forty miles per hour, the passengers would all go to ruin, and at one hundred miles per hour they could not conveniently go any further."

Steam Engines in Schuylkill County.

There are in Schuylkill Co. Pa., 142 steam engines, with an aggregate horse power of 4,500, performing the labor of 45,000 men.—This is the great coal region of the United States, and it is nothing now to what it will yet be in regard to steam engines and a mining population.

Another Steamer Blown Up.

The Charleston News contains rather a melancholy account of the loss of life on board the Steamer Richland, which was blown up and destroyed, near Britton's Ferry, on her way from Cheraw to Georgetown. She had on board one thousand bales of cotton which were all consumed. There were eight or ten lives lost. The body of the Captain (Brock) was burnt with the boat. A Mr. Davis and wife were killed, while two little girls, whom they had with them, were saved. John McFarland and Mr. Taylor are the names of two persons known to be lost.

When will we see an end put to this wholesale system of murder

What becomes of all the pins? One firm in Massachusetts manufactured two barrels of pins per day, numbering about 8,000,000, or, at the rate of 48,000,000 per week.

Worm in the Eye.

A singular case occurred a short time ago at the Glasgow Eye Infirmary Scotland, in the person of a young girl 16 years of age who had lost the sight of her left eye. The cause was ascertained to be the presence of a living worm hydatid (the cysticercus of scientific naturalists,) in the eye, close before the pupil, which is completely obstructed. This species of animal consists of a round bag about the size of a small pea, from which on one side springs its body, which is a filament, consisting of numerous rings, and capable of being elongated and retracted at the creature's will. The body ends in the neck and head, and the latter is supplied with four lateral suckers. All this was plain to the naked eye in this instance, but appeared still more so when the animal was viewed through a microscope. As the existence of such a creature in the interior of the eye not only prevents vision, but ultimately destroys the whole texturies of the organ, it was resolved to remove it by operation. This was successfully effected. The patient behaved with perfect steadiness, and found her vision immediately restored. The hydatid continued to live for more than half an hour after being extracted. As only four similar cases are on record, the worm excited much curiosity, and was examined by numerous visiters, both lay and medical.

An Old Boat.

"At the meeting of the Society of Antiquaries held on the 8th ult., (says the Edinburgh Witness,) there was presented to the Society, through the liberality of the trustees of the river Clyde, an ancient boat, dug up in 1847, at Springfield, opposite the Broomielaw. This most interesting relic is hewn out of a single tree, and is so rude a fashion that we can hardly assign too remote a date to it within the era of our island's history."

This ancient boat would seem from the description, to have been a very respectable canoe or dug-out, and would not be considered so great a curiosity perhaps in this part of the world. The Romans, however, in the days of Agricola, describe the Caledonians as sailing on the Firth of the Clyde in boats made of willows and leather, very much like those employed by the Scythians. This canoe may have belonged to an era antecedent to the employment of leather to make a boat. The mounds in Britain are exactly like those in our own country. Were they made by the same people?

American Tea.

Junius Smith, Esq. who has wrote some able essays on the cultivation of the tea plant in the United States, has returned from South Carolina, and states that from numerous experiments he is confident tea can be grown in any of our Southern States, of as excellent quality as the Chinese, and he believes that before many years the culture of the tea plant will add vastly to the wealth of this country Plants set out near Charleston by Mr. Smith grew and flowered beautifully.

THE CHOLERA has proved comparatively harmless to the population of London. It is much less destructive in its ravages than it was during its previous visit. There are now FREE BATHS in all parts of London, a fact which no doubt accounts for the harmlessness of the cholera this time, compared with its virulence in 1831-32.

The Smithsonian Fund has increased from $500,000 to $750,000. The Regents have thus far only taken $30,000 of the interest, for building and other purposes. The buildings are to be completed within three years, and they hope to have $150,000 of the appropriated interest left, to add to the principal when all is done.

Rossi, Prime Minister to the Pope, who was assassinated in Rome, was married to the daughter of Guizot, late protestant minister of Louis Phillip.

There is nothing purer than honesty; nothing sweeter than charity; nothing warmer than love; nothing richer than wisdom; nothing brighter than virtue; and nothing more steadfast than faith. These, united in one mind, form the purest, the sweetest, the richest, the brightest and most steadfast happiness.

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The Great Salt Desert.

Perhaps the most remarkable feature of the great West, is the vast Salt Desert, which lies nearly in the centre of the Continent. The frequent allusions to it in the Western News, induces us to give the following account of it, which we find in Bryant's journal of a tour through California.

We stood on the brow of a deep precipice, the descent from the ridge of hills immediately below and beyond which a narrow valley or depression in the surface of the plain, about five miles in width, displayed so perfectly the wavy and frothy appearance of highly agitated water, that Colonel Russell and myself, who were riding together some distance in advance both simultaneously exclaimed: "We must have taken a wrong course, and struck another arm or bay of the Great Salt Lake." With deep concern we were looking around surveying the face of the country to ascertain what remedy there might be for this formidable obstruction to our progress, when the remainder of our party came up. The difficulty was presented to them; but soon, upon a more calm and scrutinising inspection, we discovered that what represented so perfectly the "rushing waters" was moveless and made no sound! The illusion soon became manifest to us all, and a hearty laugh at those who were the first to be deceived was the consequence; denying to them the merit of being good pilots or pioneers, &c.

Descending the precipitous elevation upon which we stood, we entered upon the hard, smooth plain, we had just been surveying with so much doubt and interest, composed of bluish clay, incrusted, in wavy lines, with a white saline substance, the first representing the body of the water, and the last the crests and froth of the mimic waves and surge. Beyond this we crossed what appeared to have been the beds of several small lakes, the waters of which have evaporated, thickly incrusted with salt, and separated from each other by small mould-shaped elevations, of a white, sandy, or ashy earth, so imponderous that it has been driven by the action of the winds into these heaps, which are constantly changing *their positions and their shapes*. Our mules waded through these ashy undulations, sometimes sinking to their knees, at others to their bodies, creating a dust that rose above and hung over us like a dense fog.

From this point, on our right and left, diagonally in our front, at an apparent distance of thirty or forty miles, high isolated mountains rise abruptly from the surface of the plain. Those from our left were as white as the snowlike face of the desert, and may be of the same composition, but I am inclined to the belief that they are composed of white clay, or clay with sand intermingled.

The mirage a beautiful phenomenon I have frequently mentioned as exhibiting itself upon our journey, here displayed its wonderful illusions in a perfection and with a magnificence surpassing any presentation of the kind I had previously seen.

I observed that where these appearances were presented in their most varied forms, and with the most vivid distinctness, the surface of the plain was broken, either by chasms hollowed out from the action of the winds, or by undulations formed of the drifting sands.

About eleven o'clock we struck a white plain, uniformly level, and utterly destitute of vegetation or any sign that shrub or plant had ever existed above its snow-like surface. Pausing a few moments to rest our mules and moisten our mouths and throats from the scant supply of beverage in our powder keg, we entered upon this appalling field of sullen and hoary desolation. It was a scene so entirely new to us, so frightfully forbidding and unearthly in its aspects, that all of us, I believe, though impressed with its sublimity, felt a slight shudder of apprehension. Our mules seemed to sympathize with us in the pervading sentiment, and moved forward with reluctance, several of them stubbornly setting their faces for a countermarch.

For fifteen miles the surface of this plain is so compact, that the feet of our animals, as we hurried them along over it, left but little if any compression for the guidance of the future traveller. It is covered with a hard crust of saline and alkaline substances combined, from one-fourth to one-half of an inch in thickness, beneath which is a stratum of damp whitish sand and clay intermingled. Small fragments of white shelly rock, of an inch and a half in thickness, which appear as if they once composed a crust, but had been broken by the action of the atmosphere or the pressure of water rising from beneath, are strewed over the entire plain and imbedded in the salt and sand.

As we proceeded, the plain gradually became softer, and our mules sometimes sunk to their knees in the stiff composition of salt, sand and clay. The travelling at length became so difficult and fatiguing to our animals that several of the party dismounted, (myself among the number), and we consequently slackened our hitherto brisk pace into a walk. About two o'clock A. M., we discovered through the smoky vapor the dim outlines of the mountains in front of us, at the foot of which was to terminate our day's march, if we were so fortunate as to reach it. But still we were a long and weary distance from it, and from the "grass and water" which we expected there to find. A cloud rose from the south soon afterwards, accompanied by several distant peals of thunder a furious wind, rushing across the plain and filling the whole atmosphere around us with the fine particles of salt, and drifting it in heaps like the newly fallen show. Our eyes become nearly blinded and our throats choked with the saline matter, and the very air we breathed tasted of salt.

The Indian Archipelago.---Coal, Tin and Gutta Percha.

The tin mines in the Archipelago are of the kind called washings, and Mr Logan the Editor of the Journal of the Indian Archipelago, speaks of no less than 60 mines, producing 3000 tons of fine grain tin yearly. The tin fields to which they belong stretch over a vast district of the peninsula, extending from the seventh degree of north to the third degree of south latitude. The mines are wrought principally by Chinese colonists, who are reported to manage them with considerable skill, producing metal of a finer quality than that of Europe.

The annual product of British tin is about 5000 tons—the annual product of all Europe beside is only about 230 tons,—a great difference indeed. Great Britain is the tin sheet shop of the world and she is therefore throwing out her grappling irons for tin in India and the above news shows that she is not unsuccessful.

The Island of Borneo has lately been taken possession of by them under Mr. Brooke. This island is a splendid empire, full of all vegetable wealth, apparently, from rice and spices down to gutta percha, and a mineral treasury, from gold and diamonds up to iron and coal. Great fields of bituminous coal have recently been discovered. In Borneo coal has been traced along one river for 20 miles into the interior. It is of an excellent quality, well adapted for steam navigation—a particular point in wise British policy.

Gutta percha is now become a great article of export from the Archipelago. During the first 6 months of last year, no less than 27,000 tons was exported to England. In collecting this gum the tree which yields it, is destroyed and yet the produce of one huge tree only yields a product valued at a dollar and a half. The tree exists in abundance over an area of 500 thousand square miles. There need therefore be little apprehension of its speedy destruction, and by the time this takes place, some other substitute may be discovered,—nature's laboratory has had but a limited exploration.

Use of Tobacco.

Prout, in his Treatise on Disease, says "There is an article much used in various ways though not as an aliment, the deliterious effects of which on the assimilating organs require to be briefly noticed: namely, tobacco. Although confessedly one of the most virulent poisons in nature, yet such is the fascinating influence of this noxious weed, that mankind resort to it in every mode that can be devised to insure its stupifying and pernicious agency. Tobacco disorders the assimilating functions in general, but particularly, as I believe, the assimilation of the saccharine principle. I have never, indeed been able to trace the development of oxalic acid to the use of tobacco, but that some analagous and equally poisonous principle (probably of an acid nature) is generated in certain individuals by its abuse, is evident from their cachetic looks and from the darkish and often greenish yellow tint of the blood. The severe and dyspeptic symptoms sometimes produced by inveterate snuff-takers are well known; and I have more than once seen such cases terminate fatally with malignant diseases of the stomach and liver. Great smokers, also, especially those who employ short pipes and segars are said to be liable to cancerous affections of the lips. But it happens with tobacco as with deliterious articles of diet, the strong and healthy suffer comparatively little, while the weak predisposed to diseases, fall victims to its poisonous operations. Surely, if the dictates of reason were allowed to prevail an article so injurious to the health and so offensive in all its forms and mode of employment would speedily be banished from common use."

The Axe and the Saw.

Early one spring morning, when the sun had scarcely melted the hoar frost from the brown face of the winkled earth, an old axe happened to fall in with a saw. There was a 'cutting air' abroad, that threatened the newly shaven chin with *chaps!*

'Ah! my old blade!' said the Axe, 'how goes it with you? I came purposely to see how you do'

'I really feel much obliged to you,' said the Saw, 'but am sorry to say that my *teeth* are very bad. My master has sent for the doctor, who, 'twixt you and me and the post, is no better than 'an old file'" I was in the workshop last night, where,——

'Where, no doubt, you——*saw* a great deal,' facetiously interrupted the Axe.

The Saw showed his teeth in a sort of grin betwixt melancholy and mirth, and resumed—

'Why' I may say so with some truth; and I consider it no more than a duty. I owe Mr. Carpenter, to do as much as I can, in spite of my teeth for he is liberal,—in point of *board*'

'And, do you never grow rusty? asked the Axe

'Not with *over* work,' replied the Saw; 'and, indeed, I have always found that constant employment best preserves our polish, which, after all, is only artificial.'

'You are quite a philosopher.'

'Not exactly so; for I sometimes do grow exceedingly *hot*, and lose my *temper*.'

'And what says your master?'

'Why he generally desists awhile and I soon grow cool again, and then I cut away like a razor through a piece of mottled soap!'

'You are a happy fellow,' said the Axe.

'How differently am I situated! My master is a chopping boy, with a thick block, which is tantamount to saying he is a fat fool. He is very sharp with me sometimes; and when he finds I am inclined to be blunt, he grinds me most cruelly.'

'Alas!' cried the Saw; 'it's the way of the world, my friend; for I have invariably remarked, that the rich always grind the poor for the sake of the 'chips.'

'Bravo!' exclaimed the Axe.

'You see I've not lived in tha world all this time without getting a notch or two, said the Saw.

'Nor I either,' replied the Axe; although, in obtaining the said notches, I have not only lost my courage but a portion of my metal, too!'

'Well, I never saw!' exclaimed my friend; 'how you talk! I am sure your teeth do not give you any trouble, at any rate.'

'I ax your pardon, old boy,' remonstrated the Axe; 'for, although I do not complain of my teeth exactly, my *chops* give me a pretty considerable deal of trouble, I can tell you.

The Saw grinned approval of the Axe'swit.

'Peace!' exclaimed the Axe. 'Here comes Mr. Carpenter; so 'don't show your teeth till you can bite,'—I believe that is the maxim of of a relation of yours?'

'Not a relation,' said the other: though they are the words of a *wise old saw*.'

Clarified honey applied on a linen rag is said to cure the pain of a burn as if by magic.

Velocity of Light.

Light travels with the amazing velocity of 192,000 miles in a second of time. It may be interesting to know how philosophers have been able to determine, with such certainty, that light really travels with this amazing velocity; for the fact is known as certainly as any phenomenon in nature. The method adopted was the following:—The eclipses of the satellites or moons of the planet Jupiter had been carefully observed for some time, and a rule was obtained, which foretold the instants, in all future time, when the satellites would glide into the shadow of the planet, and disappear, or again to emerge into view. Now it was found that these appearances took place sixteen minutes and a half sooner when Jupiter was near the earth, or on the same side of the sun with the earth, than when it was on the other side; that is to say, more distant from the earth by one diameter of the earth's orbit, or path in the heavens which it takes in revolving round the sun, and at all intermediate stations, the difference diminished from the sixteen minutes and a half, in exact proportion to the less distance from the earth. This proves, then, that light takes sixteen minutes and a half to travel across the earth's orbit, and eight minutes and a quarter for half that distance, or to come to us from the sun. This being its amazing velocity, it may, for all useful purposes on the earth, be regarded as passing between bodies instantaneously; and it is for this reason that we perceive the flash from a gun at a distance, for a preceptible time, before we hear the report, and why we may count several seconds between the appearance of a flash of lightning, and hearing the thunder which follows.

Bean Soup.

Put two quarts of dried white beans into soak the night before you make the soup, which should be put on as early in the day as possible. Take five pounds of the lean of fresh beef—the coarse pieces will do. Cut them up, and put them into your soup pot with bones belonging to them, (which should be broken to pieces,) and a pound of bacon cut very small. If you have the remains of a piece of beef that has been roasted the day before, and so much underdone that the juices remain in it, you may put into the pot, and its bones along with it. Season the meat with pepper and salt, and pour on it six quarts of water. As soon as it boils, take off the scum, and put in the beans, having first drained them and a head of celery, cut small, or a tablespoonful of pounded celery seed. Boil it slowly till the meat is done to shreds, and the beans all dissolved. Then strain it through a sieve into the tureen, and put into it small squares of toasted bread, with the crust cut off. Some prefer it with the beans boiled soft but not quite dissolved. In this case, do not strain it; but take out the meat and bones with a fork.

Fable.

The sword of the warrior was taken down to brighten; it had not been long out of use. The rust was soon rubbed off, but there were spots that would not go, they were of blood. It was on the table near the secretary. The pen took advantage of the first breath of air to to move a little further off.

'Thou art right,' said the sword, 'I am a bad neighbor.

'I fear thee not," said the pen, 'I am more powerful than thou art; but I love not thy society.

'I exterminate,' said the sword.

'And I perpetuate,' answered the pen, 'where were thy victories if I recorded them not?—Even where thou thyself shalt be one day—in oblivion.

Moustaches.

After all that has been said against the moustache we would not condemn a man as a confirmed villian because he wears a long black or red whisk between his nose and mouth. It's a sorry sight, we know, but we would rather pity the wearer or give him a passing kick, than go so far as to advise a refusal to him of a trifling loan to buy a glass of beer. They are very useful to sop up gravy or butter at the dinner table.

Camphor dissolved in brandy and eaten on a piece of loaf sugar is good for a sore throat.

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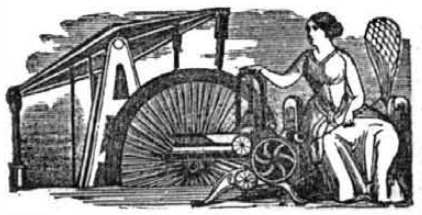


New Inventions.

New Process of Plating by Heat.

This is a process recently discovered by M. Hessenberg of Leipsic, and read before the Polytechnic Society of that famous city.

The metal to be plated is first well cleaned and polished, then its surface is moistened with salt water by a camel hair pencil. It is then spread over with a powder, made as follows: Dissolve silver in nitric acid and precipitate the silver by introducing a slip of copper, then wash and dry the precipitate. Take one part of this powder or precipitate, one part of the chloride of silver and two parts of calcined borax. These ingredients are mixed together with care in a porcelain mortar and washed through a fine silk seive. This powder is placed on the metal in such a manner that a layer of it covers the whole surface, when the metal is placed in a clear charcoal fire and heated to redness. It is then taken out and immersed in boiling pure water, or water with a very small quantity of the tartrate of potash dissolved in it. After this it is rubbed with a stiff brush over every part. It then appears to be already entirely silvered, which is very important as this is the basis of the art, and the silver in this way penetrates the metal for the following operations.

The metal is again covered with a paste, made as follows :—Mix carefully equal parts of silver powder, pure sal ammoniac, pure salt, sulphate of zinc and clear ox gall. These are all ground together very fine adding a little distilled water with a little dissolved gum in it. When this paste is laid on with a pencil, the article is placed in a clear charcoal fire, heated cherry red, then plunged into boiling water, and when it is cold, it is well rubbed. This is repeated four or five times, when the object is sufficiently silvered and fit to receive the lustre of the burnisher.

Articles silvered or plated in this way show when broken that the silver has evidently penetrated into the copper, thereby ensuring the most durable plating that can possibly be obtained. The points and edges of plated goods from which the silver has been worn off may be restored by this means, and to effect this, it will be necessary only to apply the process to those parts which may require a renewal of the silvering—a neat fire made on the silversmith's forge can be built for the particular article. Articles which may have been blackened and tarnished may readily be restored to their original beauty by this simple, easy and exceedingly valuable process.

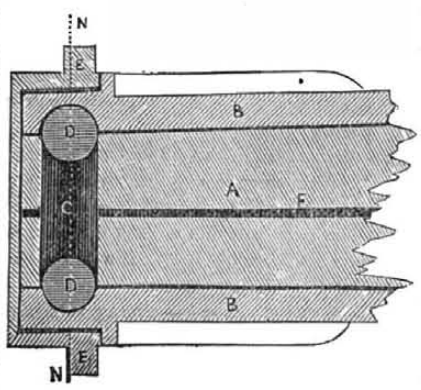
Astonishing Discovery.

The Londonderry Journal, of the 27th ult has a statement of an astonishing discovery which was communicatod to the Society for the improvement and growth of Flax held in Belfast. The following extract contains the truth of the matter :

"Mr. Owen referred to the discovery which his friend Dr. Hodges would say was worthy of the deepest consideration of every one present. Having heard some time since that from peat there could be produced ammonia, naptha, soda ash, oil, spermaceti and some other substances, he left London for Paris, and called on an eminent chemist there. He had previously been speaking on the subject with a Mr. Reece, also an eminent chemist, who told him that for the expense of £30 he could produce from 100 lbs of peat chemical results to the value of £148. It was Mr. Reece who referred him to the Paris chemist, and he (Mr. Owen) produced it to him and repeated the statement of Mr. Reece, as to what he could do with the peat, the former assured him (Mr. Owen) that he really could do all that he had stated in the document. He then rang a bell, and ordered the results of his experiments to be brought up from his own laboratory, and he (Mr. Owen) saw with his own eyes the sperm candles made; the ammonia, the oil, and the soda-ash produced from peat; and that chemist thought this was the greatest discovery of the age, and one which would eventually, convert the greatest curse of Ireland—the bogs, heretofore unprofitable, and the greatest obstacle of improvement—into the greatest blessings, and double the fertility of the soil, to an extent that none could estimate. Well he (Mr. Owen) being a man of business, declined to take any or all these statements for granted, and, consequently, he got a number of experiments made by Dr. Hodges and his friend, Mr. Reece, which were entirely confirmatory of all the statements made by his friend, Mr. Reece. But still, not to deceive himself or others, he was determined to have an experiment made on a large scale, and had employed the largest apparatus in use for that purpose ; and he rejoiced to tell this meeting, that, on Tuesday last, his experiments had been commenced, and the results were beyond all expectation, for everything had succeeded to his utmost wishes." [Mr. Owen here handed to the Chairman a sample of the spermaceti so prepared by him, which was minutely examined by a great number of gentlemen in the room.]

The Ball Axle.

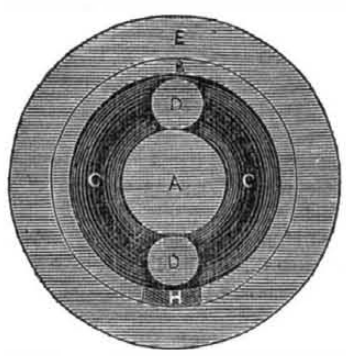
FIG. 1.



This is a beautiful invention by Mr. Charles Chinnock, No. 54 Cliff street, this city, for which the patent was issued two weeks ago.

Fig. 1, is a horizontal section, and fig. 2 is a transverse section, taken at the line N N. The same letters refer to like parts. A, is the axle. B, is the bush of the wheel, part of which, as will be observed, projects outside of the wheel. In the inside of the bush is a semi-circular groove running all around and there is a similar semi-circular groove cut or cast in the axle—the two forming a complete spherical groove C. It is evident then that if a small ball is inserted in that groove, that it will couple the axle and wheel together, and prevent—(the grand desideratum) all lateral motion of the wheel. This is the principle of the invention. D D, are two balls, which make an equal bearing with very little friction. The balls are inserted in a small opening H in the bush, which is plugged with a little piece of leather and the cap E secured

FIG. 2.



on preventing the ingress of any dirt whatever. F is a small channel for the admission of lubricating material which can by this invention be most beautifully supplied, the groove C, forming an oil box. This is a very simple invention and as beautiful as simple. The more it is examined the more favorably are we impressed with its advantages. The balls are of chilled iron and they may be said to be indestructible.

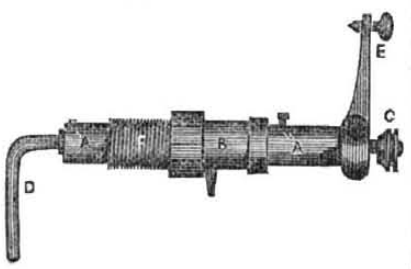
Annealing Wrought Iron.

A patent for the following manner of manufacturing wrought iron into articles of various forms without the expense and trouble of forging them, has been taken out in England by Mr. Wm. Rocke, of Dudley, Worcestershire. First scraps or pieces of wrought iron are melted in a cupola furnace with the fan blast, or in a reverberatory furnace. For small quantities a pot or crucible will answer every purpose. The melted wrought iron scraps are run into moulds the same as cast iron, and are then very brittle, deficient in malleability.

Second—the moulded articles are annealed as follows. The articles are piled in an iron box lined with fire brick, or a casing only of bricks. The articles in the box are then surrounded with iron ore, (the red is the best, but any will answer,) mixed with ground charcoal and covered so as to keep out the air, which would injure the process. The articles however, may be merely covered up with the ore and ground charcoal, or the ore itself, but all admission of air prevented, when they are subjected to a certain heat for some time, which gives them the required malleability. The watching of this part of the process is a nice job—great care must be observed by the workman until he gets sufficient practice to know when the process is complete. He must therefore be acquainted with the different kinds of iron and a little practice will give correctness to the eye, for let science say what it will, the most difficult knicknacks in the arts, are dependant for success upon the skill of the eye (the practicsl part.) A small bar cast along with the articles, may be placed in the box and drawn out with the tongs from time to time to ascertain the state of the iron and detect the completion of the process, when the articles may be removed.

For inferior articles a quantity of cast iron may be mixed and melted with the wrought iron scraps, but in no case should there be more of the cast than the wrought iron melted together. Articles may be made in this manner with the temper of steel, by mixing one fourth of cast steel with the wrought iron, or more steel according to the temper of the article wanted, but in no case to exceed the quantity of wrought iron. It would be well to melt the iron before the steel is introduced into the pot, but this does not make much difference. All the mixtures of the wrought iron and cast iron, and of the wrought iron and steel, are melted, moulded and annealed. The claim of this invention, is for the reproducing of malleability in castings of wrought iron by the annealing process described.

Improved Guage Cock.

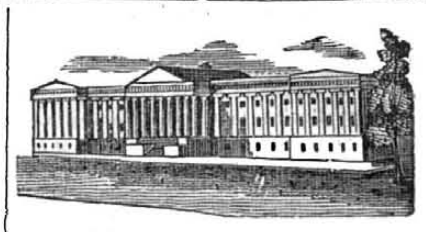


This is another guage cock invented by Mr. H. Tyler. of Worcester, Mass.

It is designed as a guage and self stop cock. B is a hub screwed into the boiler plate by F. A1 is the main steam tube, into which D, the guage is screwed. In the interior of this tube is a grooved conical piston which lets the steam pass up the tube and escape out of the small tube below B. The piston is connected with a coiled spring and a shank, which pass through B, and a collar A2 which fits as a gland into B. E is a handle which passes through an eye in the end of the shank, and after D is turned round the steam or water can only escape by pushing in the shank by the handle E, which presses the piston from its conical seat in A1. After the boiler has been tested, the piston springs into its conical seat and shuts off the steam itself. C is a screw cap on the outer end of the shank. This is a very compact guage cock. It has no stuffing box, as A2 fits conically into its seat in the screw part of the hub, and therefore it is very valuable on that account.

Rheumatism.

By drinking a strong decoction of *saven* for a few days, the most bitter rheumatism, it is said, will give way. Saven is an evergreen nearly resembling spruce.



LIST OF PATENTS

ISSUED FROM THE UNITED STATES PATENT OFFICE,

For the week ending January 16, 1849.

To P. S. Devlan, of Reading, Penn., for improved Lubricating Compound. Patented Jan. 16, 1849.

To James Callaghan, of New Bedford, Mass. for improved method of directing the Scoops in Dredging Machines. Patented Jan. 16, 1849.

To Samuel Truscott, of Columbia, Penn., for improvement in Cast Iron Car Wheels. Patented Jan. 16, 1849.

To Henry Wright, of Newcastle, Me., for improvement in Boot Trees. Patented Jan. 16, 1849.

To John Sheriff, of Pittsburg, Penn., for improvement in Stop Cocks for hot water and steam. Patented Jan. 16, 1849.

To Bliss Corser, of Mount Morris, N. Y., for improvement in Clapboard Machines. Patented Jan. 16, 1849.

To Oliver Barr, of Aurora, Ill., for improvement in Harvesting Machines. Patented Jan. 16, 1849.

To A. Bigelow and J. Butler, of Granville, Ohio, for improvement in Looms. Patented Jan. 16, 1849.

To Emery N. Moore, of Boston, Mass. for improvement in machine for Postmarking Letters. Patented Jan. 16, 1849.

To David B. Rogers, of Seneca Falls, N. Y. for improvement in Cultivators. Patented Jan.

To Wilbur M. Davis. of Gardiner, Me. for improvement in machinery for making Boxes. Patented Jan. 16, 1849.

To Hazard Knowles, of Washington, D. C. for improvement in Mill Bushes. Patented Jan. 16, 1849.

To L. P. Curtiss, of Cincinnati, Ohio, for improvement in Indicating Telegraphs. Patented Jan. 16, 1849.

Reduction of Silver Ores.

Two new modes of reducing silver ore have been recently introduced from Germany into Mexico, which promises ere long to supersede entirely the use of that expensive agent quicksilver. The discoverer is a Mr. Ziervogle. According to the present mode the ore is first calcined with salt which converts the sulphuret into a chloride ; it is then at once removed from the furnace to a suitable tub, or other vessel, and a hot solution of salt poured over it which immediately takes up the chloride of silver and holds it in solution ; the liquid is then drawn into another vessel, containing metallic copper when the solution is decomposed, the silver being precipitated, and the liquor by a simple process is brought to its original starting point and may be used over and over again with but little loss of salt. In the second process ores or sulphurets, are carefully roasted in a reverberatory furnace until they are converted into sulphates, when they are thrown into a suitable vessel, and boiling water poured over them, which immediately dissolves the sulphates ; the liquid is then drawn off and the silver precipitated by the same method as the first process. The latter process is best adapted for ores which contain a large portion of iron and copper pyrites as a certain quantity of sulphur must be present to ensure the conversion into a sulphate.

Poisoning with Pounded Glass.

We find in the last number of the Medical Examiner published by Lindsay & Blakeston, a curious case quoted from the West. Jour. of Med and Surg., going to disprove the idea, so familiar and long established, of pounded glass being poison. It was the case of a little infant, only nine months old, whom some wretch had dosed with upwards of eighty grains of powdered glass, "of every size," says the periodical quoted, "from a grain of wheat to the finest sand," without the child at any time showing the slightest indisposition or receiving any hurt.

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NEW YORK, JANUARY 27, 1849.

Steam and Gas Engines.

Above all other machines, the steam engine is the great hobby of improvements. Every month brings forward something new in the shape of a new gas, or atmospheric engine—something that is vastly to increase the power and lessen the expense of engines.—Last year we had accounts of an engine being propelled by carbonic acid gas. Then came the wonderful accounts of Boutigny's spherical steam engine, and now we have accounts of a combined steam and chloroform engine, invented by M. du Trembly, at present exhibiting in London.

Gas as a propelling agent early attracted the attention of engineers and inventors. In 1823 there was invented a gas engine by Mr. S. Brown, which made a far greater noise at that time in the world than any of the gas engines invented since that period. It was intended to supersede the steam engine entirely. It was actuated by the inflamation of hydrogen gas in a vessel containing a portion of atmospheric air sufficient for the combustion of the hydrogen. The great principle of it, was in the ingenious plan of creating and employing the vacuum. Oxygen and hydrogen gas when ignited combine in the formation of water and occupy a less space than in their gaseous state. This was the mode employed by Mr. Brown to form a vacuum, by the said vacuum vessel communicating with the working cylinder. Two vacuum cylinders were employed, and the gases were ignited by a jet of burning gas, and the water was discharged by air admitted through a sliding valve. This engine moved a boat on the Thames at the rate of seven miles per hour, but a company formed with a capital of $21,000 to test its utility, lost every penny—it could not compete with the steam engine. In 1823 Sir Humphrey Davy succeeded in reducing carbonic acid to a liquid state by the mechanical pressure of the condensing pump, and immediately it was grasped at as a prime propelling substitute for steam. This liquid at the temperature of freezing water exerts an expansive force equal to 30 atmospheres, and at a heat of only 120° Fah. 90 atmospheres—and it increases at the rate of 10 pounds on the square inch for every additional degree of heat.—Here there was a liquid which from its natural expansive qualities, stimulated the hope that in carbonic acid liquid gas they had discovered a mechanical propellant which could exert a force of 1320 lbs. on the square inch at 212 degrees of Fah, the boiling point of water. Surely there was enough in this discovery to excite almost to delirium any man—even the most scientific. Sir Humphrey Davy himself was enthusiastic on the subject, as his able paper on the discovery read before the Royal Society is abundant evidence.—Four years after the discovery the ingenious and famous engineer I. Brunell, took out a patent for an engine propelled by gases, that had been condensed into a liquid state, and employed carbonic acid gas heated by water at 120°. When it failed in the hands of Brunel, what can we say more about it than "*it was.*" Brunel also tried gunpowder as a propelling agent, but that failed too. He found that the gases, nitrogen and carbonic acid, developed in the combustion of the powder, were perfectly uncontrollable.

In 1827, Messrs. Stirling of Glasgow, took out a patent for an engine propelled by heated air. This engine improved is now in operation, but we believe only in a solitary instance.

Last year a gentleman of Ohio was excited to the employment of gunpowder as a propelling agent for a rotary engine, but we believe that it has not answered his expectations.

Last year there was read before the Academy of Sciences in Paris, an account of an engine invented by M. Boutigny, and described in Galignani—and also in the correspondence of Littel's Living Age, as being a wonderful machine "one of ten horse power being so small as to be easily carried in a gentleman's pocket," like a watch no doubt. It was described as possessing its wonderful power by the discovery of "a new property" in the spheroid state of water. This we could never understand. Water will assume a spheroid form when thrown upon red iron, but its temperature in that state never rises above 205° and it gives off but little steam, and furthermore, its oxidising effects we should think, would be great in the formation of what the Germans call oxidule.

The chloroform engine invented by M. du Trembley, a French gentleman, is reported to give out double the power of a steam engine without any additional cost of fuel. This opinion was embodied in a report presented to the French government in July last. The engine consists of two cylinders, the one piston being worked by steam as in the common engine, while the exhaust steam is received in an air-tight case termed a vaporiser in which there are a number of small copper tubes filled with chloroform. Upon the coming in contact with the tubes, the chloroform becomes vaporised and works the other cylinder, while the steam is condensed and returns into the boiler, as warm water, to regenerate fresh steam, or motive power. In the meantime the chloroform after exerting its force upon the second cylinder, is, in its turn condensed, and, by means of a force pump returned to the vaporiser, which is thus kept regularly supplied, the chloroform being alternately vaporised and condensed.

We make no pretensions to the spirit of prophecy, but it is our opinion that the condensing steam engine as it is, which has stood the test of more than 40 years, almost as it came from the plastic hand of James Watt, will successfully stand the test of as many more.

Gutta Percha.

This substance which we have frequently noticed, has been discovered to be composed of three distinct substances, viz. a white matter, which is considered the pure gutta percha, a substance of a dark brown color, and a considerable quantity of sulphur. Various experiments have been made to ascertain its strength when mixed with other matters, and also as to what pigments would mix with it without rendering it brittle or deteriorating its qualities. From these it appears that the only pigments that could altogether be relied on to be used with gutta percha were orange red, rose pink, red lead, vermillion, Dutch pink, yellow ochre and orange chrome. Under the influence of heat and pressure, gutta percha would spread to a certain extent, and more so if mixed with foreign matters. All the mixtures composed of gutta percha and other substances which had been subjected to experiment, except that containing plumbago, were found to increase its power of conducting heat; but in its pure state gutta percha was an excellent non-conductor of electricity. The best composition for increasing the pliability of gutta percha is that formed in conjunction with caoutchouc tar, and next in order that of its own tar; and the best material at present known for moulding and embodying was obtained by mixing gutta percha with its own tar and lampblack. In the process of manufacturing gutta percha, rude blocks of the material are first cut into slices, by means of a cutting machine formed of a circular iron plate of above five feet diameter, in which there are three radial slots furnished with as many knives or blades. The blocks are placed in an inclined shoot, so as to present one end to the operation of the cutters. The slices are then placed in a wooden tank, containing hot water, in which they are left to soak until found in a plastic state. They are afterwards passed through a mincing cylinder similar to that used in paper mills for the conversion of rags into pulp, and then thoroughly cleansed in cold water tanks; the water, in cases of impure gutta percha, being mixed with a solution of common soda or chloride of lime. It is next put into a masticating machine, such as is used in the manufacture of caoutchouc, and then pressed through rollers; thus being converted into sheets of various width and thickness. When necessary the sheets are again masticated, and again passed through rollers. These sheets are subsequently cut into boards by vertical knives, placed at the further end of the table, along which the sheets are carried by a cloth or web to another roller, round which they pass and are cut into the required widths.—The bands or straps are then removed, and coiled up ready for use. Driving bands for machinery are thus made, and shoe soles and heels are stamped out of similar sheets of gutta percha. All kinds of ornamental wainscotting and mouldings are now made of it

For the Scientific American.

Acoustic Telegraphs.

Pipes for conducting messages by the voice, the same as the telegraph does by marks or signals, has long been a favorite subject with philosophers. In Nicholson's Philosophical Journal of Feb. 1803, a Mr. Walker describes a simple apparatus connected with a speaking trumpet by means of which at a distance of 18 feet he held a communication with another person by only whispering. There are, however, instances of wooden pipes being used to convey sounds in 1750 by Jerrissin, a merchant of Cleves, in Europe. He had become almost deaf, when by accident as he sat smoking one day with the bowl of his pipe resting on the harpsichord while his daughter was playing, he was surprised and delighted to hear the tones of the sweet music. He thought that his hearing had returned, but when he lifted his pipe the sounds vanished. The thought struck him that the pipe had to do with the conducting of the sound, and he afterwards used to hold conversations freely with persons by holding a piece of hard wood in his teeth, while the person who spoke held the other in the same manner. Any person who will try this experiment, will be surprised at the superior conducting powers possessed by wood over the atmosphere. There are some kinds of stone too that conduct sound in a wonderful manner. There is a stone bridge in Dumbarton, Scotland, over the river Leven, which can convey sounds in the most distinct manner across the river, by placing the ear on the coping of the parapet at one end and making the most gentle taps on the other end. Dr. Franklin heard at a distance of 2 miles the sound of two stones struck against one another under water. The velocity of sound in certain solid bodies is 16 or 17 times greater than the air. At the late meeting of the British Association, Mr. Whishaw read a paper on the different applications of Gutta Percha, and among the most prominent objects were speaking tubes with the pompous title of *Telakouphanon.*

Mr. Whishaw stated that "speaking tubes of Gutta Percha, were quite new, also the use of a whistle with them to call the attention of people at a distance." Turning to the Bishop of St. Davids he said "that in the event of a clergyman having three livings, he might by the aid of three of these tubes preach the same sermon in three different churches at the said time." In America this never could happen, for such purposes it could be of no use here; nevertheless, we think that gutta percha tubes might be well employed for an acoustic telegraph. Tin tubes are used in factories and printing establishments for this purpose, but acoustic tubes might be employed of several miles in length and gutta percha we believe is the best substance for this purpose. This invention however, is not new, and Mr. Whishaw borrows his idea and almost his very language, from Thomas Dick. In 1824, we think it was, M. Biot made a number of experiments in Paris by transmitting sound through long tubes of 1,039 yards long and heard whispers audibly at that distance in 5½ seconds. This was in 1824, and it established the feasibility of conveying messages through acoustic tunnels. Don Gautier calculated that by using a series of horizontal tubes, a long message might be conveyed 900 miles in one hour. We do not doubt it, and we may yet live to see the acoustic telegraph established between different cities, thereby friends will be enabled to hear the voice of friends at 60 miles distant. We hail the discovery of gutta percha as one probable means of carrying out this project. It is not chimerical scheme by any means but one which sooner or later will be adopted on a small scale in every Factory, Foundry and Public Building in the country.

Lighting with Gas.

A committee of the city Council of Worcester Mass. has made a report recommending the the lighting of Worcester with oil gas—"as being cheaper, a more beautiful and agreeable light, and because it is superceding coal gas in many places"—instancing Philadelphia and New York. This is new to us here. It is generelly believed that the coal gas is the cheapest. They report in favor of lighting the city with the oil gas made according to James Crutchett's Patent.

The process of making oil gas is more simple than that of coal gas, as it requires less purification, and the proposition to light Worcester does not appear extravagant in price. A gallon of whale oil affords on an average about 90 cubic feet of gas, of the specific gravity of 900. When oil gas is subjected to a pressure of from 20 to 30 atmospheres, about one fifth of the gas is condensed into an oily volatile fluid of a specific gravity of 821.—When the pressure is removed, this liquid does not entirely reassume the vaporous state, and it may be preserved in ordinary well stopped bottles. Several oil gas establishments were erected a few years ago in Britain, but owing to the cheapness of coal there in comparison with oil, although the latter is more simple and easy to manufacture, they were all failures, and were converted into coal gas manufactories.

The American Condensing Steam Engine.

This work which we noticed last week is now ready for sale at our Office. The Plates are better executed than any that has ever been presented to the public. They are beautifully shaded and every part in its relative position is presented at once to the eye. There is not a steamboat, machine shop, college, or school that should be without one of the plates framed and hung up for reference. The price is $3 for the plate with a pocket key explaining all the different parts, together with a short but true history of the machine.

Manufactures in the South.

The Southern States are fast spreading a network of cotton factories among the cotton growing regions. On one creek in Lawrence county, Tennessee, there are four factories in successful operation. The Hope factory has 800 spindles in operation and employs about 50 hands. The Shoal Factory has 720 spindles in operation and employs 45 hands. The Union factory has 2000 spindles and 100 looms and the Eagle factory has the same number of spindles as the Shoal factory.

The Southern Cultivator published at Augusta, Geo. by D. Lee, comes to us in a beautiful New Year's dress, and full of interesting matter as usual.

The Genesee Farmer also comes out with a new coat and the New England Farmer is resuscitated and will not say fail again.

Back Volumes of the Scientific American.

A few more copies of complete sets of vol. 3 of the Scientific American may be had at the office, either bound or in sheets. Price neatly bound $2 75, in sheets suitable for mailing $2. The second volume minus 4 numbers from being complete we can furnish for $2 bound, or in sheets and mailed at $1 50. Send in your orders early if you desire them filled for we have but a few more copies left of either volume, and the number is growing less every day.

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Calico-Printing in China.

There are print-works in the city of Canton, some of which employ as many as fifty work people. The inhabitants of the suburbs who wish to have their calicoes printed in their houses engage itinerant workmen who carry about with them the necessary implements and perform the operations when required. The impression is made with blocks of considerable dimensions made of a scarce wood called "Tasp-mon," which is brought from Onom. The engraving of the block is very carefully executed and is expensive.—Fashion is so little liable to change in China, that the same blocks generally serve for about ten years; and the Chinese are so very jealous of foreigners that it is with difficulty and only with high prices that they will dispose of them fearing they might be imitated by European manufacturers. The habit of the Chinese to do most things the reverse manner to that in which they are done in Europe, is in no instance more remarkable than in the manufacture of printed goods. Instead of applying the block to the piece, the block is a fixture, and the piece is applied to the block. The operations are performed with slight variations the same at all places in China were printed goods are manufactured and those of Ningpo may serve as on illustration. The block being first adjusted two men stretch tightly and adjust the cloth over the engraved part of it; the form or relief is consequently made to protrude those parts of the cloth in contact with it beyond the general surface.—The cloth is then made to adhere to the block by beating it with a wooden mallet first prepared by making numerous punctures in it with pointed instruments. The workman then dips a suitable brush into water, and dexterously passes it over the surface of the cloth, in such a manner that the parts protruded by the figures of the block, only become moistened, which serves as a preparation for the reception of the colouring matter, and which is applied in precisely a similar manner, using color instead of water, The dry parts which have escaped the damping and coloring operations do not easily absorb, though sometimes stains occur,—which, however, are generally on the back part of the piece as the front is that which adheres to the block. It requires great precision a steady hand, and a quick eye on the part of the workmen, to touch with the brush only the forms and designs which are projected—imperfectly visible—by the block and which are intended only to receive the colour.

The workshops of Ningpo are very small. In rooms looking on to the street, workmen may be seen operating and on the same chamber finished prints suspended. In another room there may be probably, another table at work, a stove to dry the pieces and an apparatus for the color; and at the other end may be observed a species of laboratory—a miserable affair—and a kitchen. A Chinese printer can earn about two shillings a day.—The colors used are always of a definite character; they never produce any modified tints, being in perfect ignorance relative to the properties of mordants.

At Canton are manufactured very small hankerchiefs with borders, white ground and fillings of blue, at about two shillings per dozen. They also print larger hankerchiefs, with coloured grounds the pattern of large flowers, birds, &c., about one shilling each They are shocking productions, and covered with stains. The only passable goods of Chinese manufacture are brought from "Liou-Tchou," which is the Manchester of China. The designs have quite an European character from their neatness and brilliancy of colour. Those of Changhai are very inferior. The patterns consist of very grotesque figures, and the cloth is thick and inferior.—Sometimes however fine English long cloths are employed. It is remarkable, that at the present day Chinese industry should have occasion to make such numerous calls upon that of other nations. Their yarns are often made from Indian cotton; calicoes from English yarn; and cloth which is printed or finished in China is frequently English long cloth.

It has been a question whether the cloth of Chinese manufacture, known as "Nankin" in Europe, owed its peculiar shade of color to the chemical process of dyeing. It is ascertained that the article is made from cotton which has naturally the yellow tint of Nankin, and which remains unchanged after the processes of spinning and weaving. It is found on the banks of the Yang-tze-Liang, in the neighborhood of Nankin, and on the banks of the grand canal. Its color is attributed by many to the presence of oxide of iron in the soil where it grows; this will explain, if true, why, when these cotton plants are transplanted to another locality, they degenerate and produce white cotton. There are also cotton plants in the province of the Philippines which produce cotton of a red shade of color, and which also bear white cotton if transplanted to another soil. These plants, it is said, if retransplanted to their original soil, will again yield red cotton.

Diving Pigs.

The following scientific piece of information, says the editor of the Pottsville Emporium, Pa., "was recently published in the American Zoological Journal." It evidently shows that there are great things going on in the world yet—greater even than any geologist can boast of in all the terrestrial transformations by ancient fire and water. But to our tale and the Pottsville Pigs, which no doubt are of the Irish duck progeny that Nancy McGra had so much difficulty in learning to swim..

The writer after speaking of the greatest changes which occur in the physical character of animals, consequent upon change of situation, very seriously describes a new race of "web footted" Pigs, to be found in Pottsville, as follows:—

"The diving pigs which exist in the interior of Pennsylvania are remarkable. The town of Pottsville is situated at the point where the Norwegian creek empties into the river of Schuylkill. The creek is a rapid stream but the river, where the creek enters is rendered deep and sluggish by a dam below. The butchers of the town reside along the creek and are in the habit of throwing the offal into the stream which is washed into the river. A large number of Irish laborers live near the river keeping as is customary with them many pigs. These obtain their subsistence chiefly by diving for the offal at the bottom of the river, here about ten feet deep. A particular race of pigs called 'Divers,' has been bred in the place, differing from others in the fact that they are webfooted and are remarkable for their ability to dive and for the length of time that can remain under water. Their power in this way seems to increase with age. One male of two years of age was observed to remain under water more than thirty minutes; younger pigs, ten, fifteen and twenty minutes. An ordinary pig is drowned in less than one minute as ascertained by experiment. The peculiarities of the diving pigs are supposed to result from long practice and physical change transmitted and increased from generation to generation. The reason why they remain so long under water is, that they may there devour their food, which is in danger of being taken from them by other pigs which frequent the shore. The young of this amphibious breed take to the water with great alacrity at an early age and soon learn to dive. Nor do they strike their throats with their fore feet in swimming as do others of the race, by which they frequently destroy their lives.—These singular facts relating to this peculiar breed of pigs show in a striking manner the ability of nature to adapt herself to peculiar circumstances, and throws some light on the origin of the many varieties of the different species of animals"

Fenelon once a Missionary in Western New York.

This annunciation will strike all with surprise. Robert Greenhow, Esq. of Washington, D. C, read a paper at the last meeting of the Historical Society, proposing to show the evidence of the fact that the Archbishop of Cambray and the illustrious author of "Telemachus," was once a missionaary in the western part of this State.

Animal heat and Combustion.

The temperature of animal bodies is independent of the surrounding atmosphere, or other medium in which they live; for it is found that the heat of the human body is nearly the same all over the world. Living bodies exhibit a remarkable difference from unorganized matter in this respect: the latter soon require temperature similar to that of the bodies by which they are surrounded; for instance, a candle, if brought into a room, of which the temperature is very high, begins to melt; if some water is exposed to the air, when it is below 30 degrees, the water is frozen: thus, in both instances, we see how readily unorganized matter acquires the same temperature as that of the medium in which it is placed. This, however, is not the case with living bodies; they maintain an equal temperature, with very slight variations in summer and winter, at the Poles, and at the Equator. To do this it is necessary that they should be enabled, in a cold climate, to generate a great quantity of heat, and in a hot climate, to dispose of it readily.

The phenomenon of respiration is analogous, in many respects, to combustion. The blood circulating in the veins contain a considerable quantity of carbon; and before the blood can circulate through the body, to perform its various functions, it is necessary that this carbon should be removed. This is effected in the lungs. The blood is conveyed there, in an impure state, in very small blood vessels, which are permeable to the air, and are placed over small globules of thin cellular tissue, being the terminations of the windpipe. When we inspire the air, it is conveyed to these globules, or air-cells: and, passing through them, enters the blood: the oxygen of the air then combines with the carbon, and forms carbonic acid, just the same as it is formed when we burn a candle, in a glass under water. This carbonic acid, mixed with the nitrogen of the air, is given out when we expire our breath; in the case of the candle, the union of its carbon with oxygen occasions heat; and the same effect is produced in the lungs. The formation of carbonic acid there is attached with the evolution of heat, and this is conveyed by the blood to every part of the body.

The means by which the same temperature is maintained by the body, in cold weather as in hot, are vital; for when we are exposed to cold, an impulse is given to the function of respiration, by means of which, the blood is more frequently brought into contact with the air, and, consequently, a greater degree of heat is generated.

Spontaneous combustion can hardly be enumerated among the general sources of heat, since it occurs so seldom. Instances are recorded, however in the scientific journals, of several well authenticated instances, in which persons have been discovered burning slowly away, somewhat in the way that phosphorus burns, at a low temperature, in the atmosphere. It appears, indeed, as if the body underwent some change, by which a considerable portion of it was changed to phosphorus, or some substance very nearly resembling it. Phosphorus is principally formed from animal matter; and the supposition has therefore, some support. But, as the instances when this peculiar mode of generating heat have occurred but seldom, philosophers have not had sufficient opportunities of investigating the phenomenon satisfactorily.

Ice in Hot Ashes.

A traveller, who lately visited Mount Etna, gives the following account of a phenomenon which struck his notice: "The main crater is about five hundred feet deep at this time (so say the guides,) but I think this must be measured down the slope of the funnel. I could not, however, see to the bottom, owing to the volleys of sulphurous smoke whirling up ever and anon, accompanied by a rumbling noise, and occasionally by a slight vibration of the ground under foot. Here I found amid the warm ashes, on the slope of the crater within, heavy crystals of ice set all at one angle, and curved like a shark's teeth. I picked up one piece as big as a walnut and asked the guide if he could account for its presence. Far be it from him to give a "rationale" of anything of the sort; it would derogate from the dignity of Etna. It reminded me of a chemical experiment played off by a French savant at one of the late "Scienziati" meetings. He made water freeze in a red hot cup. The silver or platina being brought to a red heat, a few drops of water are thrown in, which do not evaporate, but jump about. Sulphuric acid is now poured in, which in the act of boiling produces so intense a cold by the disengagement of its latent heat, that the drop of water at once turns to ice. I opine the chemical process here to be the same, only on Nature's grand scale. The morning mists supply the moisture, and within the crater there is no lack of sulphurous mixture boiling as in a retort; hence as hot fumes ascend, the crystals of ice are precipitated. If any one rejects this solution of mine, let him find a better, remembering he is to account for pieces of ice forming on a bed of warm ashes. The principles of "disengagement of latent heat" may also account for the severity of the cold felt on Etna, which is far greater than is due to its elevation."

The Unicorn.

M. Antoine d'Abbadie, says the London Atheneum, writing to us from Cairo, gives the following account of an animal new to European science, which account he received from Baron Van Muller, who had recently returned to that city from Kordofan. "At Melpes in Kordofan," said the Baron, "where I stopped some time to make my collections, I met on the 17th day of April, 1848, a man who was in the habit of selling to me specimens of animals. One day he asked me if I wished for an A'nasa, which he described thus:—

It is the size of a small donkey, has a thick body and thin bones, coarse hair, and tail like a boar. It has a long horn on its forehead and lets it hang when alone but erects it immediately on seeing an enemy. It is a formidable weapon; but I do not know its exact length. The A'nasa is found not far from here (Melpes), towards the S. S W. I have seen it often in the wild grounds; where the negroes kill it, and carry it home to make shields from its skin. This man was well acquainted with the rhinoceros, which he distinguished under the name of Ferit from the A'nasa. On June the 14th, I was at Kursi, also in Kordofan, and met there a slave merchant who was not acquainted with my first informer, and gave me spontaneously the same description of the A'nasa; adding that he had killed and eaten one not long before, and that its flesh was well-flavoured." Herr Rippell and M. Frosnel, adds M. d'Abbadie, have already spoken of a one-horned African quadruped; and I have with me some notes which tend to the establish the existence of perhaps two different kinds.

Fossil Foot Prints.

The Corpus Christi (Texas) Star, says that a number of singular foot prints have recently been found in the limestone strata on the Brushy, resembling human foot prints, but of a gigantic size. They are imbedded in the soft argillaceous limestone and are as distinct as if they had been made in plastic clay. A gentleman who visited them a few months since states the toes and the print of the feet are so distinct that there is scarcely a doubt that they were made by a human being, who must have rivalled Goliah in size. The stride is so large that a man of ordinary size can with difficulty jump from one foot print to another. The limestone in which they are found, we believe, is similar to that which extends through Austin, New Braunfels and Bexar, and from the quarries in this rock most of the stones in the Alamo and other buildings of Bexar were obtained. The strata contains many marine fossils, among which are the ammonite, nautilus, gryphe, etc.—These foot marks, like those discovered in red sandstone formations were probably made by an extinct species of birds or ornithienites.

Many years since, Governor Childs, of Berkshire, then a young man, was bitten by a mad dog which resulted in symptoms of hydrophobia. His father, an eminent physican, gave mercury in doses sufficient to produce salivation; and, though the patient suffered dreadfully, he was, through the untiring efforts of his father, finally cured.

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TO CORRESPONDENTS.

"W. C. P. of N. C."—Your communication has been received, but we are unable to furnish you with the desired information, as the patentee is unknown to us. If we can ascertain any facts in relation to it we will write you the particulars by mail.

"W. W. of Wilmington."—The punching machines you refer to, cannot cost less than 65 or 70 dollars. The Maps of California sell here at 50 cents.

"G. F. C. of Mass."—Your application for letters patent has been rejected. You will now see the importance of our advice, when we wrote you that you had better not apply. We mean to be candid with our patrons.

"R. L. of N. Y."—Your funds are received and we are only waiting for your model now, and when received we will proceed with your business.

"W. E. of N. Y."—Your papers will be sent to you for signing as early as on Monday, and perhaps will be ready te send this day.—Patent fee received.

"C. H. D. of N. H."—Please send on your model immediately, for we can attend to it better now than at any future time

"R. C. of Mass."—Your model and funds were received of Adams & Co. last Saturday. The drawings and specification will be ready to forward in a few days. They are being attended to now.

"J. P. S. of ——."—Mr. Lee has a perfect right to sell both Wood's and Walcott's patents, separately or combined to one man—or one to a man, and the other to another in the same territory, but mind you, the right of the improvement does not give the owner the right to use the original—the question here is not one of the right of sale, it is one of infringement of patent. It is only in the agreements of sale that these things can be harmonized.—For example—if one man has a territorial right to Wood's patent, no other can use the principle of that patent, by merely tacking on an improvement, although the improvement may be patented. This is surely plain.

"A. G. of Mass."—We have not seen any boiler feeding apparatus to surpass the force pump. Many have been tried and found wanting. It is a common plan to exhaust the steam from the cylinder into the supply cistern, so that all the steam is not lost. We do not know of any plan like yours in operation—it appears to be new and good, but a working apparatus will alone be able to show its advantages—accomplish this and then its merits will be displayed.

"J. K. M. of Maine."—Is it the *swimming* dress you mean. We do not know of any *diving* dresses, none but a *diving bell*. The swimming dresses are made in this city—the price we do not exactly know, but should suppose them to cost $40 or $50.

"J. B. G. of Mass."—Your improvement in the Brad Awl appears to be a very superior one indeed and must soon find its way into general use. The fee of the Patent Office is $30. The other expense would probably be about $20.

"C. L."—We mean by "compound numbers" a comparison between yours and other plans such as Gregory page 96, which arrives at a result in a rapid manner. It is resolved by mathematics in the measurement of pyramidical structures—dividing the plane into equal squares, multiplying the base by half the sum of the side.

"A. C. of Va."—It is very difficult (from a claim) to say positively that another arrangement is a different invention, yet from the one sent, we should decide that the different arrangement of the same devices, is a different invention in your case.

"W. H. D. of Washington and "C. D. H. of Mass."—We are glad that you are turning your attention to the proposed revision of the patent laws and we hope you will get your essay ready for us as early as possible. There will be many competitors for the prize but you will stand an equal chance with the others. We have received two or three papers on the revision of the laws, since we offered the premium and we expect very many more before the first of April.

"D. W. of Me."—Your favor of 14th has been received, and the check which you sent to us was promptly paid. Your invention of the "Webber" is being attended to now and the papers will be sent for your signatures in a few days. The last model which we received from you we do not consider worthy an application for a patent. We think it would be rejected at the Patent Office for want of novelty if an application were made.

"W. C. H. of Vt."—Your letter and drawings have been received. Please forward the funds as soon as possible and your business will be attended to.

"D. W. of La."—You are doubtless a very ingenious mechanic, and many ideas advanced by you are sound and philosophical. But we would advise you to confine your inventive genius to the maturing of some one of your plans, and witness its operation.

"R. T. of Vt."—The engine you refer to has been sold. At present we have none on hand of that capacity.

"W. J. S. of N Y."—Your inquiries in regard to "French color makers" cannot be answered satisfactorily. We think there are but two in this country, and one of them resides in Providence R. I., name unknown.

"A. W. of Maine."—We called upon S. & B. and find that the "Roundpond" has not yet arrived; as soon as we receive the model you shall be advised.

"E. H. of Mass."—You know that there are very good stop motions in use. There is no one however, that we have seen like yours, or applied in the same manner, combining a free and correct action of the lathe (a bad term for the thread beater) which we would like to see changed. If the improvement, will enable a loom to perform one sixth more work in the same time, and why should it not? it is one of the most important inventions that has been brought to our notice for a long time.

"E C. A. C. of Ill."—Your letter and funds reached us in due time and the business has been properly attended to. We do not know where the published report you speak of can be obtained, but will endeavour to ascertain and if successful, you shall be remembered.

"F. A. C. E. of Ia."—Your last letter and drawings have been received, and will be attended to when we hear from you in regard to the former matter, which was examined and answered immediately upon its receipt. Your plans seem to be good.

"W and G. Detroit."—Your model is at this office, and we are waiting your action in regard to the $30—necessary to its progress. We wrote you nearly a month ago—and hope you will give us an immediate decision that we may know how to dispose of your model and letters. Our examiners are ready to proceed with your business.

"A. J. of R. I."—Your improvement in the Temple, is good. We have frequently lamented the selvedges of cloth and especially in the ginghams of the power loom—any plan to improve a selvedge, is certainly valuable. We believe that a patent can be secured if you wish it. It would be best to have a small, but neat operative model—one that will show how it operates. You are perhaps the best judge of its financial value. If you wish any more information we will cheerfully comply with your request.

"S. & Co. of Mobile."—Your drilling machine was shipped per the packet "Edwyna" on Monday last, and the bills of lading sent by mail.

"S. & S. of Ct."—We are having your saw packed this day, and as early as Monday you may expect it at Croton Falls. $40 received.

Advertisements.

☞ This paper circulates in every State in the Union, and is seen principally by mechanics and manufacturers. Hence it may be considered the best medium of advertising, for those who import or manufacture machinery, mechanics tools, or such wares and materials as are generally used by those classes. The few advertisements in this paper are regarded with much more attention than those in closely printed dailies.

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The diagrams of the Engine are represented on a large sheet of 38 by 28 inches, in size and present to the eye two distinct views, one with its parts in elevation and the other in section all strictly accurate of a Condensing Engine as applied to our River and Sound boats. All the internal parts are also represented and a full description given in a book which accompanies the drawings.

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J. STEWART is also authorized to act as agent for the sale of the celebrated Lathes manufactured by James T. Perkins of Hudson, of large size and at prices from $250 to $800. A specimen of this description may be seen at his factory as above. j27 tf

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WE have made such arrangements with the inventor and manufacturer of the above article that we are now able to furnish at our office any quantity of the celebrated Guage Cocks known as "Adams' Patent" on reasonable terms. The invention was represented by an engraving in No. 11 of this Vol of the Scientific American and is an excellent improvement. Price single $10 with the right to use, and they may be sent to any part of the United States. Address MUNN & CO., Post Paid. j27

A Premium and Diploma were awarded by the New York Renssalaer Co. Fair, to S. Lichtenthaeler, for his patent Blind fixtures, being an apparatus for Opening and Shutting outside Window Blinds, from the inside of the house, without raising the sash.

Persons desirous of obtaining patent rights of this invention for any of the Southern or Western States, will apply to the undersigned Patentee (the rights for the states of Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, New York, Michigan, Ohio, Pennsylvania, Delaware, Maryland, the 11 northern counties of New Jersey, and the District of Columbia, are all sold off)

S. LICHTENTHAELER.
Litiz, Lancaster, Co., Pa.

Notice.—All power of attorney given to C. H. Farnham, has been cancelled, and is hereafter null, and void, and he is therefore no longer authorized to sell, or transact any business appertaining to the above invention for me S. Lichtenthaeler. j27 2m*

BRICK MACHINE WANTED.

THE subscriber wishes to purchase one or two Brick Moulding Machines of cheap, durable and simple construction. A machine that will mould bricks without the use of dust or sand upon the moulds would be preferred.

Persons having such machines for sale address the subscriber at Washington, N. C. (Beaufort County,) giving a description of the same.

j27 3t J. B. C. CLARK.

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THE engine and boiler represented in No. 9 of present vol. of the Scientific American is again for sale. Several opportunities for disposing of it have been offered and refused in consequence of its having been sold to a gentleman from the coutry but now he expresses his ability to meet the terms which we require (cash in advance) and the engine is therefore offered for sale again. Any person now desiring it can have it shipped to his address for $150 cash which is $25 less than it is actually worth. Address MUNN & CO.
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Augusta, Maine, Oct. 28, 1848. o28 1y

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For the Scientific American.

Poisonous Metals.—Test of Arsenic.

When the poison is obtained in the state of arsenious acid, it may be reduced to the metallic condition by igniting it in a small glass tube with some reducing agent, such as a soda flux made by grinding crystals of soda with one eighth of their weight of charcoal, and then heating the mixture gradually to redness, so as to drive off all the water. A more convenient flux, is the residue of the tartrate of soda incinerated in a covered platinum crucible. Cyanide of potassium is not so good as this mixture although it answers very well. In reducing the arsenious acid, two or three parts of the flux should be employed to one of the acid, the tube should be of the hardest and best glass for this purpose, about 3 inches long and one eighth of an inch in diameter.—When the heat is applied by a spirit lamp, the metal sublimes and forms a ring of an iron gray color on the cool part of the tube, an odor like that of garlic is given out at the same time. The physical properties of the metallic crust are very perceptible, sufficient to distinguish the arsenic. The surface next the glass has a brilliant polished appearance a little darker than bright steel, and has a fracture of cast iron when examined with a lens. On applying the flame of a spirit lamp to the crust, it disappears settling on the cooler portions of the tube. Dr. Christisson remarks, "that the characters of the arsenical crust are distinct when weighing only the 300th part of a grain, and that a crust of this weight a tenth of an inch broad and four times as long, may show characteristically all the physical peculiarities of an arsenical sublimate a hundred times larger."

If there arise a doubt as to the mistaking a deposit of charcoal for that of arsenic, this can be removed by submitting it to the action of the spirit flame. Charcoal too, has a brown deposit without lustre, not so with arsenic Preparations of antimony and zinc yield sublimates, it is said, resembling the arsenical crust, but "no preparations of these metals," says Dr. Turner, "can be reduced to a metallic state either by charcoal or black flux with the fullest red blast of the blow pipe." The oxide of cadmium may be reduced and sublimed but it gives out no odor, and its lustre is like that of tin with a brown margin of reproduced oxide, but in no case need there be suspicions of mistaking arsenic for this rare metal. It must be observed that the glass for the foregoing experiment must contain no lead, or the action of the flux may stain the lead glass with a crust somewhat similar to the arsenical crust, but the arsenical crust is volatile, the lead glass stain fixed. There are some kinds of glass made with a portion of arsenic flux, but this all volatises during the burning and in a number of experiments made by the Paris Academy of Medicine in analysing clear glass, no poison could be detected. In cases when the quantity of arsenious acid is very minute, it should be dropped into a dry and warm tube of about one eighth of an inch in diameter, and well dried charcoal in the proportion of about three or four times its bulk dropped upon it. The upper part of the charcoal should be brought to a high temperature before the arsenious acid is heated. In this way, says Mr. Taylor, distinct arsenical sublimates may be procured, less than the 100th part of a grain.

There are not a few liquid tests for this poison, a few of which we will enumerate.

Metallic copper when boiled with an acidified mixture containing arsenious acid becomes covered with a steel gray crust of metallic arsenic. This is a very delicate test, and will detect arsenic when present in no more than a millionth part of the liquid. But the crust thus formed has to be submitted to a careful examination. Mr. Taylor instead of using copper foil employs fine copper gauze of woven wire which presents a great surface to the arsenical liquid, and after the deposit has taken place, he dries it first by pressure between the folds of blotting paper, and then above the flame of a lamp. He then rolls it into a small compass and introduces it into a reduction tube already described, when it is heated slowly and octrahedral crystals of arsenious acid are thus obtained. In this way he detected the 144th part of a grain of arsenious acid in two fluid drachms of gruel and other organic fluids in many experiments. In this manner it has also been easily separated from wine, brandy and the liquid contents of a person's stomach poisoned by arsenic. Mr. Taylor recommends this method as a test when examining organic liquids supposed to contain the poison, for which purpose, the liquid, after being filtered through muslin, or paper, should be strongly acidulated with hydrochloric acid and boiled with a slip of bright copper. Should the brightness of the metal remain unimpaired at the expiration of half an hour, no arsenic, or an extremely minute quantity, can be present, should the copper be covered with a gray deposit, it must be dried and heated in a reduction tube, with the view of procuring from it crystals of arsenious acid. Dr. Christisson speaking of this process, says: "It is the best yet proposed for the detection of arsenic in solution." He says that the fluid to be boiled should be mixed with one-tenth of its volume of hydrochloric acid and to be heated to boiling before the copper is introduced, otherwise the metal may become tarnished though no arsenic be present. In the weakest solutions, it is ten or fifteen minutes before the arsenic is visibly deposited and forty minutes at least should be allowed for complete deposition.

We will adduce some more tests in our next.

For the Scientific American.

Mezzotinto Engraving.

This is kind of engraving very different from common engraving upon steel. The common or line engraving, as it is called, is done by the graver, the lines made by that instrument producing the figures by shade. Mezzotinto on the other hand produces the shades as it were by minute dots and the light by scraping away dotted parts of the steel plate. The first operation is to trace out with chalk the space for the picture on a smooth steel plate. The grounding tool is then employed to go over the whole face of the plate for the picture. This tool is formed with a curved face serrated like the finest rasp. It is held steadily in the hand pressed with a moderate force rocking it from end to end till it has completely hacked all the face of the plate. The other lines are then drawn across the plate at right angles to these and the rocking operation repeated. These diagonal operations have to be repeated a number of times until the part of the plate for the picture, produces a very dark ground. The design is then traced on the plate, some artists employing one way and some another, and the picture is finished by scraping away parts of the serrated surface for the light shade by a tool formed something like a burnisher. The masses of the strongest light are first begun and scraped pretty smooth, and some parts where there is no shade, are burnished. The next lower graduations of shade are then scraped down after which the reflected lights are entered upon. Various proofs of the work are taken during the progression of the engraving.

This style of engraving is fast banishing all other kinds ot steel engraving out of the field. It is exceedingly soft and rich in tone, so much so indeed that is has been condemned by some as being too tame in character throughout. We are glad that this argument against the art can no longer be advanced. Within the past year Mr. Ritchie of this city has produced Mezzotints possessing all the vigor of the line engraving combined with the rich shade of the mezzotint,—it is a new discovery in the art, which is fast earning a proud name to the inventor, and which in other hands would perhaps be worse than useless, for he combines like Albert Durer and Hogarth and Sartain, the qualification of artist and engraver.

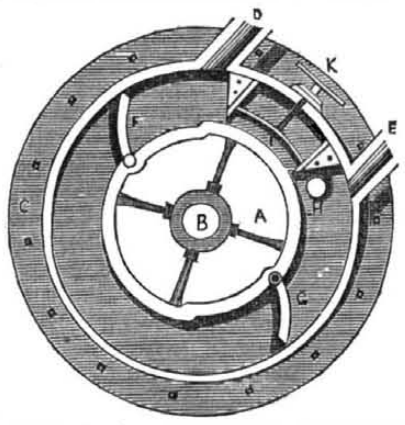
It is difficult to tell who was the first discoverer of mezzotint engraving. It was practiced on copper for a long time before it was tried on steel. Mr. Turner an eminent London engraver, states in the Transactions of the Society for the encouragement of the arts, that James Watt was the first who suggested unto him the use of steel plates for the mezzotint. This was in 1812. No work of the kind however, was produced until 1821, and this was upon a steel plate softened by the process discovered by Mr. Perkins the famous and ingenious American engineer, then residing in London. In 1821 Mr. Turner engraved a portrait on one of Perkins' plates which met the approbation of Sir Thomas Lawrence, and in 1822 some splendid engravings were produced and prizes given by the society mentioned. Since that time—in the short period of 28 years, the art has spread over the whole civilized world embellishing all our parlor periodicals and adorning our choicest and richest annuals.

History of the Rotary Engine.

Prepared expressly for the Scientific American.

CHAPMAN'S ROTARY ENGINE.

FIG. 38.



This is a rotary patented in 1810, invented by Mr. William Chapman.

A represents a drum, packed on its two ends, and revolving within an interior cylinder C C, so that a channel is formed between the two cylinders in which the steam acts upon the flaps F G. I is a cavity filled with ~~hemp, which effectually stops up the passage~~ or channel; an adjusting screw K tightens up the packing as it wears; D is the the steam pipe, and E the escape pipe. The steam being introduced at D presses upon the valve or flap F, which recedes from the pressure, until the valve G having reached the roller H, is shut into the cavity L, and passes under the stop I. As soon as it has cleared the stop, a pin on the outside strikes a lever attached to the spindle on which the flap is hung, opening it out again as before, so that it fills up the passage and receives the action of the steam, allowing F to be shut at the proper place, without interrupting the revolution of the axle.

By the flap wing valves employed by Mr. Chapman, there could be no possibility of keeping the engine tight, as they would wear down the most obdurate steel surface in a very short time. It must have made a great deal of noise—like the rattling of a lot of tilt hammers. We saw one in operation in this city not long ago constructed upon the same principle. It was an entire failure and so will every one formed in a like manner. The rattling of the valves over the roller H, reminded us of the noise in the Nail Works.

"Such rattling and such thumping O,
With cranks and cams and battering rams
That made a wonderous pounding O."

Steam Colors.

Roller printing calicoes. Steam Black: 1 pint of red liquor of 18 dgs., 2 pints iron liquor of 24 dgs., 1 gall. logwood liquor at 8 dgs., 1 3-4 pounds starch, and about 1 pint pyroligneous acid at 7 dgs.; all these materials mixed promiscuously and boiled for a few minutes to form a mucilage, the goods to be steamed about half an hour.

STEAM BLACK FOR THE BLOCK.—10½ pints of logwood liquor at 6 dgs. Fa., 14 ounces of logwood British gum and 12 starch, 3 ounces sulphate of copper, 1 ounce copperas and add a little sugar of lead and nitrate of iron, and if intended for goods of silk and wool, add four ounces of what is known as the "extract of indigo;" never put in the nitrate of iron before the mixture is cold.

STEAM REDS.—1 gall. of cochineal liquor at 6 dgs. Fa., 1 pound starch, 3 ounces oxalic acid, 4 ounces of the cristal of tin. The cochineal liquor is boiled with the starch for a few minutes: when the mixture is half cold add the oxalic acid, and when dissolved add the crystal of tin. A cheaper but less brillant red may be made by substituting peachwood for cochineal.

Waterproof for Boots.

Put a pound of tallow and a half pound of rosin in a pot on the fire; when melted and mixed, warm the boots and apply the hot stuff with a painter's brush until neither the sole nor the upper leather will suck in any more. If it is desired that the boots should immediately take a polish dissolve an ounce of wax in a teaspoonful of lampblack. A day after the boots have been treated with the tallow and rosin, rub over them this wax in turpentime, but not before the fire. Thus the exterior will have a coat of wax alone, and shines like a mirror. Tallow or any other grease becomes rancid, and rots the stitching as well as leather; but the rosin gives it an antiseptic quality which preserves the whole. Boots and shoes should be so large as to admit of wearing cork soles. Cork is so bad a conductor of heat that with it in the boots the feet are always warm on the coldest stone floor.

Electrical Fishes.

The Gymnotus Electricus, found in South America, and the Torpedo, a species of fish frequent in the Mediterranean, are the most remarkable of those fish which have the faculty of giving off electricity. The electrical action of the torpedo, depends upon an apparatus apparently analagous to the Voltaic Pile, which the animal has the power of charging at will, consisting of membranous columns filled throughout with laminæ, separated from one another by a fluid. The absolute quantity of electricity brought into circulation by the Torpedo, is so great that it effects the decomposition of water, has power sufficient to make magnets, and gives very severe shocks and the electric spark. It is identical in kind with the galvanic battery.

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